

TRIENNIAL REPORT

ON

VACCINATION IN ASSAM

FOR THE YEARS

1914-15, 1915-16 & 1916-17.

BY

MAJOR T. C. McCOMBIE, YOUNG, M.D., D.P.H., I.M.S.,
SANITARY COMMISSIONER, ASSAM.



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FROM

MAJOR T. C. McCOMBIE YOUNG, M.D., D.P.H., I.M.S.,
SANITARY COMMISSIONER, ASSAM,

TO

THE SECOND SECRETARY TO THE CHIEF COMMISSIONER
OF ASSAM.

Dated Shillong, the 13th June 1917.

SIR,

I have the honour to submit herewith the Triennial Report on Vaccination in Assam for the years 1914-15, 1915-16 and 1916-17.

I have the honour to be,

SIR,

Your most obedient Servant,

T. C. McCOMBIE YOUNG, MAJOR, I.M.S.,

Sanitary Commissioner, Assam.

Enclosure :—

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TRIENNIAL REPORT

ON

VACCINATION IN ASSAM

FOR THE YEARS

1914-15, 1915-16 & 1916-17.

1. This report deals with vaccination work in the triennial period 1914-15 to 1916-17 and more especially with the last year of that triennium, short notes for the preceding two years having been furnished with the annual vaccination returns for those years.

Introductory.

I held charge of the Department during the year 1916-17 except for a period of three months from 15th August to 14th November 1916 when the Hon'ble Colonel H. E. Banatvala, I.M.S., Inspector General of Civil Hospitals, officiated for me.

2. The number of vaccinators employed in 1916-17 was 306, as compared with 303 in 1915-16, 328 in 1914-15 and 338, the average of the preceding triennium. The decrease in the number of vaccinators is due to the abolition during the triennium under review of the licensed vaccinators, who were formerly employed in the districts of Kamrup, Sibsagar, Lakhimpur and Sylhet. In their place that number of paid vaccinators should have been employed which was estimated to be necessary for the vaccination work of the district, supposing that each man did a fair share of work, this being estimated at about 1,000 operations per man. The full complement of vaccinators estimated to be necessary when these changes were initiated was not employed in Kamrup. The average number of vaccinators employed in this district in the previous triennium was 75, but in 1916-17 only 40 vaccinators were employed, against the total of 49 estimated to be necessary when the licensed vaccinators were discharged. This district has a very high small-pox mortality and this deficiency in the number of vaccinators is regrettable, for as elsewhere remarked in this report, to my certain knowledge there are many villages in the remoter parts of this district which are not visited by vaccinators for years on end. I suggest that in future no reduction of the approved number of vaccinators employed in any district should be permitted without the sanction of the Sanitary Commissioner.

Vaccination agencies.

Licensed vaccinators are now employed only in the district of Goalpara, and rules for the control of these vaccinators under the Local Self-Government Act have been framed and submitted to the Local Administration.

Vaccination on tea gardens was, as usual, performed by garden medical officers. A small number of operations is reported to have been performed in jails and among railway employees, by their respective medical officers.

The average number of persons vaccinated by each vaccinator was 1,080, as against 961 in 1915-16 and 907 in 1914-15. The district rates vary considerably from 1,414 per vaccinator in Cachar to 594 in Lakhimpur.

The subjoined statement shows the number of vaccinators employed in each district, and the number of vaccination operations performed by each. An anomalous feature of these figures is the large number of operations per vaccinator returned by hill districts, and the comparatively small number per vaccinator

returned from plains districts, such as Lakhimpur, which returns the lowest rate, in spite of the greater density of population. One might be tempted to doubt the figures returned from the hill districts, were not the Garo Hills figure high, and in this district we recently held a very searching investigation into falsification.

The Kamrup figures, under an able and energetic Inspector of Vaccination, have risen to very near the prescribed number of 1,000 operations per man, and in the absence of any information to the contrary, I do not see why figures more nearly approaching the total of 1,000 operations per man should not be attainable in Lakhimpur, Darrang and Goalpara. In the latter district there is a very noticeable decline and the Civil Surgeon should see to it that the vaccinators are stirred up to greater exertions in future.

Number of vaccinators entertained and the number of persons vaccinated by each vaccinator in each of the six years from 1911-12 to 1916-17.

	Number of vaccinators employed.						Number of operations performed by each paid vaccinator.							
	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	Number of paid vaccinators recommended after the abolition of licensed vaccinators in 1916-17.	1911-12.	1912-13.	1913-14.	1914-15.	1915-16.	1916-17.	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	
Cachar	18	15	22	18	18	20	...	945	1,193	932	927	837	1,414	
Sylhet	90 { P 79 L 11	90 { P 79 L 11	84 { P 80 L 4	83 { P 80 L 3	81	97	...	1,312	1,640	1,444	1,316	1,353	1,375	
Khasi and Jaintia Hills	9	9	9	9	9	9	...	887	1,858	1,115	1,111	627	1,232	
Naga Hills...	5	5	5	5	5	5	...	974	1,068	1,241	911	827	947	
Lushai Hills	5	5	5	5	5	5	...	631	700	739	1,013	1,031	851	
Goalpara	27 { P 2 L 25	27 { P 2 L 25	28 { P 2 L 26	31 { P 2 L 29	28 { P 2 L 26	29 { P 2 L 27	...	932	835	928	918	963	779	
Kamrup	68 { P 46 L 22	77 { P 46 L 31	82 { P 46 L 36	72 { P 46 L 26	60 { P 48 L 12	40	49	593	623	734	800	630	970	
Darrang	16	16	16	21	16	17	...	716	718	743	628	986	753	
Nowgong	14	8	25	16	16	16	...	587	817	515	764	771	811	
Sibsagar ?...	36 { P 23 L 13	35 { P 23 L 12	34 { P 23 L 11	23	26	34	33	654	615	596	823	1,008	915	
Lakhimpur...	28 { P 14 L 14	28 { P 14 L 14	28 { P 14 L 14	30 { P 16 L 14	24 { P 14 L 10	17	17	680	577	619	582	587	594	
Garo Hills ...	6	6	6	6	6	6	...	2,497	2,093	4,005	1,618	1,437	1,217	
Manipur	9	9	9	9	9	9	...	1,470	1,517	1,518	1,552	1,554	1,430	
North-East Frontier ...	...	...	...	...	...	2	...	...	...	...	...	...	569
Total	831 { P 263 L 63	830 { P 237 L 93	853 { P 262 L 91	828 { P 256 L 72	803 { P 255 L 48	806 { P 279 L 27	...	933	1,114	1,050	1,002	1,014	1,109	

3. The total number of operations performed in 1916-17 was 371,662] as compared with 312,398 in 1915-16 and 320,016 in 1914-15, the annual average for the preceding triennial period being 325,285. The total operations during the triennium under review numbered 28,219 more than in the previous triennium. Primary vaccinations were 861,907 or 29,232 less than in the preceding triennium, while re-vaccinations numbered 142,169

showing an increase of 57,451. The apparent decrease in primary vaccinations is probably due to the exercise of stricter supervision over the vaccinators' returns by the officers of the inspecting staff whereby the wholesale falsifications of returns which were common in certain districts have been considerably reduced. A growing abuse to which reference has been made in former reports, namely a tendency on the part of inspecting staff to spend unduly long periods at headquarters, has been checked by the issue of definite orders that not more than 7 nights per month in the working season may be spent at headquarters. To ensure that these orders are obeyed, all travelling allowance bills submitted by the vaccination inspecting staff, together with tour diaries, have been checked in my office and countersigned by me before the bills were drawn.

4. The death-rate from small-pox in 1916-17 was .47 as against .58 in 1915-16 and .37 in 1914-15. The average annual ratio of deaths for the two triennia was the same, *i.e.*, .47. Kamrup, which recorded the highest rate in the province for the preceding five years (1911-12 to 1915-16), occupied the third place in 1916-17 with a rate of .79, the highest rate of 1.35 for the year 1916-17 being recorded in the district of Sibsagar. There was an outbreak of small-pox in this district in 1915-16 and vaccination was continued during the off-season to check the spread of the disease. Small-pox was also prevalent during 1916-17 in the subdivisions of Sibsagar and Jorhat, and extra vaccinators were employed to deal with the outbreak. The decreasing death-rate from small-pox in Nowgong is interesting when compared with the conditions prevailing in that district ten years ago when the small-pox death-rate was about ten times what it is now. The explanation for this decrease may be found by comparing the number of vaccinations performed ten years ago with the numbers performed during the present triennium. The latter figures are roughly double those of the former period.

5. The total number of vaccination operations performed by medical subordinates at dispensaries in 1916-17 was 3,712 (2,553 primary and 1,159 revaccinations) as compared with 1,683 in 1915-16 and 2,209 in 1914-15, the annual average of the preceding triennium being 1,531.

The number of operations done by the dispensary staff is necessarily small as the bulk of the operations is done by vaccinators in house to house visitations in rural areas and in vaccine stations in towns.

6. The percentage of success of the operations performed by all establishments combined was 97.73 in primary vaccinations and 69.40 in revaccinations in 1916-17, against 96.63 and 62.29, respectively in 1915-16 and 96.22 and 68.69, respectively in 1914-15.

The successful percentages in primary vaccinations and revaccinations in the case of vaccinators were 97.76 and 63.46, respectively in 1916-17, against 96.74 and 61.69, respectively in 1915-16 and 96.29 and 68.00, respectively in 1914-15. In the case of the dispensary staff, the percentages of success were 94.21 and 62.88, respectively in 1916-17 against 94.31 and 70.13, respectively in 1915-16 and 92.14 and 58.76, respectively in 1914-15 and in the case of other agencies 97.68 and 93.28, respectively in 1916-17, against 95.02 and 66.63, respectively in 1915-16, and 95.47 and 79.80, respectively in 1914-15. Real variations in the success rate of the lymph are, however, somewhat difficult to detect, owing to the common practice among vaccinators of marking nearly all cases as successful at the time of operation, merely showing that percentage as failures which experience has shown them will approximate to the actual results. This is done with the object of saving themselves the trouble of returning to ascertain and record the result of the operation. Such inaccuracies when detected by inspecting officers are liable to be passed over by accepting the plea of "a mistake has occurred" until it is realised how common the practice is. Efforts have been made throughout the department to put a stop to these and other kindred practices, but it is not an easy matter to obtain accuracy and honesty in returns from the class of men whom we have to employ as vaccinators.

7. As in previous years all vaccination operations in the province were performed with glycerinated lymph manufactured by the vaccine depôt at Shillong.

Vaccination work in different districts.

8. The following table illustrates by districts the progress of vaccination during the past two triennial periods :—

Statement showing the total number of persons vaccinated by all agencies, viz., vaccine department, dispensaries, tea gardens, railways and jails during the triennium 1911-14 to 191-17.

Districts.	Population.	1911-12.	1912-13.	1913-14.	Total number of the triennium.	1914-15.	1915-16.	1916-17.	Total number of the triennium.	Difference.	
										Increase.	Decrease.
1	2	3	4	5	6	7	8	9	10	11	12
Oachar ...	497,463	17,425	18,987	22,834	59,246	19,438	19,539	48,525	87,502	28,256	...
Sylhet ...	2,472,671	115,257	143,779	121,794	380,830	113,010	113,168	139,824	366,002	...	14,828
Khasi and Jaintia Hills ...	235,069	7,983	12,224	10,082	30,339	10,304	5,645	11,093	27,042	...	3,197
Naga Hills ...	149,623	5,144	5,649	6,774	17,567	4,833	4,563	5,179	14,575	...	2,992
Lushai Hills ...	91,204	3,453	3,822	4,004	11,279	6,044	5,433	5,231	16,708	5,429	...
Goalpara ...	600,643	23,773	21,292	24,609	69,674	27,334	25,743	21,493	74,570	4,896	...
Kamrup ...	667,828	40,537	41,694	43,959	126,190	44,394	38,823	40,013	123,230	...	2,960
Darrang ...	377,314	11,626	11,673	11,991	35,290	13,529	16,298	13,337	43,159	7,869	...
Nowgong ...	303,596	9,005	7,027	13,380	29,412	13,268	13,520	13,883	40,671	11,259	...
Sibsagar ...	690,299	24,431	20,501	30,768	65,700	24,245	28,831	37,631	90,707	25,007	...
Lakhimpur ...	468,989	18,239	19,804	18,505	56,548	19,742	17,490	13,873	51,105	...	5,443
Garo Hills ...	158,936	15,495	13,094	24,217	52,806	9,755	9,246	7,367	26,368	...	26,438
Manipur ...	346,222	13,477	13,817	13,782	41,076	14,120	14,104	13,075	41,299	223	...
North-East Frontier ...	...	...	...	...	...	...	...	1,138	1,138	1,138	...
Total of the Province ...	7,059,857	305,845	333,363	336,649	975,857	320,016	312,398	371,662	1,004,076	84,077	55,868

Compared with the outturn of work in the triennium 1911-12 to 1913-14, there was an increase of vaccination operations in seven districts during the triennium under review. The increase was most marked in the districts of Cachar (28,256) and Sibsaagar (25,007). In both of these districts the number of operations performed in the year 1916-17 was larger than that in any of the preceding five years, this increase in activity being due to the prevalence of small-pox in epidemic form in these districts. In Cachar vaccination was carried on throughout most of the year 1916-17 and the Civil Surgeon believes that almost all villages in the district were visited by vaccinators, and he reports that vaccination operations were done in many villages where persons from 3 months to 60 years old had never been vaccinated. In Sibsaagar, part of the increase is attributed by the Civil Surgeon to the abolition of the system of employing licensed vaccinators during the triennium under review. From the table, it will be seen that in the district of Nowgong vaccination work during the past three seasons has continued to make steady progress. With reference to the work in 1916-17 the Civil Surgeon remarks "I personally verified nearly 2,000 cases in parts of the district as widely separated as Bagori, the border of Golaghat, 52 miles from Nowgong station, in one direction and Dhing on the banks of the Brahmaputra, 17 miles from Nowgong in the other direction. A most gratifying feature is that vaccinations have been done in villages where in former years the operations had been invariably objected to". It is noteworthy that 450 'Mahapurusias' and nearly a thousand Kacharis and Lajungs submitted to vaccination last season, although these sects are prejudiced against vaccination on religious grounds. Thanks are due to Doctor Dodds Price, Civil Surgeon, who has continued Doctor Bancroft's excellent work and equally so to Mr. J. A. Dawson, I. C. S., Deputy Commissioner, for their successful administration of the vaccination work, which has had the gratifying result of considerably reducing the small-pox mortality of this district, *vide* paragraph 4. The increase of 7,869 operations in Darrang is satisfactory and is largely due to the personal efforts of the Civil Surgeon Major J. W. McCoy, I.M.S. The large decrease of 26,438 operations in the Garo Hills as compared with those performed in the preceding triennium is more apparent than real. The unusually large number of operations reported in 1913-14 in this district attracted attention and an investigation

revealed the fact that the vaccinators had been falsifying their returns to a most discreditable extent. The defaulting vaccinators were dismissed and the Sub-Inspector at fault was reduced to a lower grade. This Sub-Inspector has since been replaced by a young and energetic man. The Civil Surgeon reports that he has worked to his entire satisfaction and he is convinced that there has been no falsification of returns by vaccinators during the triennium under review. A notable decrease of 14,828 occurred in Sylhet and is attributed to the abolition of licensed vaccinators. I am not entirely convinced of the accuracy of this explanation and I consider that more activity should have been shown by the vaccinating staff, as the staff of vaccinators was reduced by three only during 1916-17, and this, according to the average of work done by each vaccinator in this district, would only account for a deficit of some 4,000 operations. There is little doubt that in this district in particular, as also in Kamrup and elsewhere, the number of vaccinators is inadequate if judged on the basis of allowing for an annual visit from a vaccinator to each village during the vaccination season. In the course of my cold weather touring in this district I have frequently come across villages in remote areas which had not been visited by a vaccinator for periods of five years or more and this is also noticeable in the Habiganj subdivision. I have asked for information in regard to this from all Civil Surgeons, but the replies received seemed to indicate that sufficient time had not been available for full consideration, and I would urge that the question be taken up in greater detail. Each district Civil Surgeon should obtain, if possible, from the Deputy Commissioner, a complete list of all the villages in his district and should then, with the aid of the vaccination inspecting staff, calculate how many vaccinators will be required to visit every village annually. He should then submit proposals based on these figures for the employment of the number of vaccinators required on the basis of an annual visit. The present system of employing only enough vaccinators to visit each village, ostensibly every second year, and in practice at intervals of anything up to five years or more in the case of villages off the beaten track, is one which experience and the small-pox mortality figures alike condemn. An increase of 7,133 operations performed among 'Mahapurushias' in Kamrup in the triennium 1914-15 to 1916-17 as compared with the preceding one is satisfactory. The decrease of 5,443 operations in Lakhimpur is attributed to the decreased number of vaccinators entertained in the season 1916-17 as a result of the abolition of licensed vaccinators. This explanation is partially correct, but it may be remarked that the Civil Surgeon and his inspecting staff have not been successful in raising the output of work by the district vaccinators to something approximating to 1,000 operations per vaccinator, which was the figure on which the number of vaccinators required for the district was calculated. If this is found to be impossible in Lakhimpur for local reasons it will be necessary to raise the number of paid vaccinators from 17 to 28, the average of the previous triennium, and the Local Board should be prepared to face the cost of doing so. The percentage of success (93.43) claimed for re-vaccination in this district appears to be extraordinarily high and requires investigation. The figure is either due to a mistake in the calculation of the returns or to inadequate supervision and checking of returns. The figure of 90 per cent. success for re-vaccinations in the Garo Hills also requires investigation.

9. There has been no change in the cadre of the vaccination inspecting staff during the triennium 1914-15 to 1916-17 as compared with the preceding one.

Composition and strength of the inspecting staff.

10. Civil Surgeons inspected and verified 8.27 per cent. of the primary and 8.22 of the re-vaccinations in 1916-17, as compared with 7.32 and 7.93, respectively in 1915-16 and 4.23 and 4.05, respectively in 1914-15, the average of the preceding triennium being 6.04 and 3.08, respectively. The percentage of primary operations inspected by Civil Surgeons in 1916-17 was the highest in Nowgong (14.99) followed by Garo Hills (11.75), Manipur (10.72) and Goalpara (10.12). During the triennium under review, Assistant Surgeons in charge of the subdivisions also did some inspection of vaccination operations and these have been included in the returns of the Civil Surgeons.

The subordinate inspecting staff inspected 53.10 per cent. of the primary and 32.81 of the re-vaccinations during the past season as compared with 53.16 and 51.65, respectively in 1915-16 and 51.36 and 41.30, respectively in 1914-15, the average of the preceding triennium being 56.60 and 43.08, respectively. The absence of any appreciable increase in the number of operations inspected by the vaccination

inspecting staff is somewhat disappointing in view of the efforts that have been made to keep them out on tour during the working season (see paragraph 3). I am inclined to think that more work really has been done by them and better work, but as it has taken them longer to do it on account of the greater detail of inspection now required of them and as the submission of inaccurate returns is liable to lead them into serious trouble, no increase in the quantity of their work is demonstrable from statistics, which take no account of the quality of work done.

Darrang with a record of only 31 per cent. of inspections of the total number of operations performed shows a lower percentage of inspections than any of the other plains districts and this is probably due to the unsatisfactory work of some members of the inspecting staff in this district on whom the Civil Surgeon has commented unfavourably.

11. The Bengal Vaccination Act, V of 1880, was extended to the Unions of Mangaldai and Nazira during the year 1916-17. During the triennium under review the number of compulsory areas was raised from 13 to 19, the six new compulsory areas being those of Sunamganj, Karimganj, Maulvi Bazar, Barpeta, Mangaldai and Nazira. The total number of births registered in nineteen compulsory areas during 1916 was 3,722 and deducting 542 deaths of children under one year, the total number of infants under one year available for vaccination was 3,180, of which 1,805 or 56.76 per cent. was successfully vaccinated, as compared with 49.03 per cent. in 1915-16 and 67 per cent. in 1914-15. During the year 1916-17 the highest percentage (98 per cent.) was recorded in the town of Goalpara, followed by Golaghat (93 per cent.), Nowgong and Tezpur each recording 91 per cent., Shillong 69 per cent., Jorhat 65 per cent. and Silchar, Dibrugarh and Barpeta each recording 61 per cent. The degree of protection afforded to infants under one year was the lowest in the towns of Mangaldai (8 per cent.) and Sunamganj (6 per cent.). The compulsory Act has only recently been extended to these towns and better results may be expected in future. The degree of protection in the town of Sylhet is only 18 per cent., which is unsatisfactory. This town has a Sanitary Inspector who is in charge of the municipal vaccination work, better results should be attainable, and the attention of the Civil Surgeon and the Chairman of the Municipality will be drawn to this. In Gauhati 6 persons were prosecuted and 3 convicted and fined Re. 1 each. In Barpeta 31 persons were prosecuted and they subsequently got their children vaccinated.

It may be pointed out that these percentages do not mean that the difference between each number and 100 represents the number of children born in the town remaining unvaccinated. Practically no children over one year of age remain unvaccinated in any of the compulsory areas and the difference actually represents the number of children whose parents have preferred to postpone vaccination until their children are over one year of age, plus the not inconsiderable number of children whose parents have left the town before the children were vaccinated, plus the children who have died after completing the first year of life and before the commencement of another vaccination season. Up to the present we have administered the provisions of the compulsory Act on the assumption that parents could not legally be compelled to have their children vaccinated until they had completed twelve months of life, whereas it now appears from legal opinions that the Civil Surgeon as Superintendent of vaccination has power at discretion to require vaccination at any suitable time after birth. Steps should therefore be taken in future to ensure that before the termination of the vaccination season all children born during the previous twelve months are successfully vaccinated and orders will be issued accordingly. If this procedure is carried out successfully, the percentages given in this paragraph should, in future, approximate more nearly to cent per cent.

12. During the year 1916-17, 668,559 capillary tubes were loaded as compared with 497,692 in 1915-16 and 547,447 in 1914-15. The increase in the year 1916-17 is due to increased demands owing to an epidemic of small-pox and to the commencement of storage of vaccine lymph in the cold storage room of the Pasteur Institute. This stored lymph will be issued during the current season. Arrangements have now been made whereby all vaccine lymph will be kept in cold storage at the Pasteur Institute for such period as experiment determines to be necessary for the disappearance of all organisms of suppuration from the lymph and up to the maximum period of storage without deterioration in potency. The bacteriological sterility is determined by examination in the Provincial Laboratory and no lymph will in future be issued until its practical

sterility has been determined. It is hoped that this reform will prevent the occurrence of axillary abscesses and other septic infections from an infective batch of lymph, which are sometimes seen, although fortunately rarely, and it will also ensure our having in hand at any time an ample supply of lymph to supply a sudden demand to deal with an epidemic.

Four hundred and fifty-one calves were inoculated during the year 1916-17 and lymph was taken from 387 calves and that of 64 calves was rejected. The average number of tubes filled per calf was 1,726 as compared with 1,746 in 1915-16 and 1,684 in 1914-15.

Failure of the lymph supplied to the plains districts in the month of October has been a common cause of complaint and source of inefficiency in the past. Investigation and observation of the cause of these failures led to the conclusion that the cause had been the exposure of the lymph to the adverse influence of heat in October by too early an issue of the first supply, which was previously sent out from the vaccine depôt before the commencement of the Puja holidays, during which period the lymph lay about in the districts until the vaccinators were ready to use it. To obviate this, the usual steps were first taken to exalt the virus by passage through a rabbit at the commencement of the season and to ensure careful selection of vesicles in the first two generations of the strain thus obtained. Arrangements were then made to prevent any delay in the use of the lymph after issue by ascertaining from district Civil Surgeons the latest date on which the lymph would be required for use after the Puja holidays which occurred in the early part of October. The Superintendent of the Vaccine Depôt was then asked to make arrangements for the despatch of the lymph from Shillong so as to arrive in the districts on the required date and not before it, and for this purpose it was necessary to carry on issue work in the Vaccine Depôt during the Puja holidays. The result of these arrangements has been an entire absence, in so far as can be ascertained, of any defect in potency of the October lymph supplies and this is the first year within the experience of the writer in which this result has been obtained.

Credit is due to the Superintendent Dr. H. G. Roberts and to Sub-Assistant Surgeon Narayan Chandra Das Gupta for their careful observance of the details of the instructions issued.

The table below shows the expenditure incurred in the Vaccine Depôt in the last three years :—

			1914-15.	1915-16.	1916-17.
			Rs. a. p.	Rs. a. p.	Rs. a. p.
Establishment ...	...	...	4,640 14 5	4,282 3 5	3,744 13 3
Purchase of calves ...	...	...	3,009 0 0	2,512 0 0	2,992 0 0
Purchase of capillary tubes ...	...	...	6,843 4 0	.....	.....
Feed of calves ...	...	...	479 12 0	402 13 0	502 9 6
Miscellaneous ...	...	...	1,130 14 3	779 1 5	822 10 9
Total ...			16,103 12 8	7,976 1 10	8,062 1 6

The decrease under the head establishment is due to the retirement of a senior-grade Sub-Assistant Surgeon in charge of the depôt and to his place being taken by a 2nd-grade Sub-Assistant Surgeon on a lower rate of pay.

Dr. H. G. Roberts was in charge of the depôt during the year 1916-17, and the subordinate charge of the depôt was held by senior-grade Sub-Assistant Surgeon Rai Sahib Kamal Chandra Datta from 1st April to 20th May 1916 and 2nd-grade Sub-Assistant Surgeon Narayan Chandra Das Gupta from 21st May 1916 to 31st March 1917. The Superintendent reports that the work of the present Sub-Assistant Surgeon has been very satisfactory.

Senior-grade Sub-Assistant Surgeon Rai Sahib Kamal Chandra Datta, who had held charge of the depôt, retired from service during the year under review. Thanks are due to this officer for the success with which he performed his duties and for the uniformly good quality of the vaccine lymph manufactured during his term of office.

13. Including the charges of the vaccine depôt the total amount of expenditure on vaccination in 1916-17 was Rs. 52,636-11-9 against Rs. 51,441-10-9 in 1915-16 and Rs. 62,169-9-0 in 1914-15, the average annual expenditure during the triennial period under review being Rs. 55,415-15-10 as against Rs. 65,090-1-8 in the preceding triennium. The decrease in the triennium under review is due mainly to the decreased expenditure in the vaccine depôt on account of the discontinuance of the supply of lymph to Eastern Bengal districts. There has been no expenditure on the purchase of capillary tubes during the last two years as the supply obtained in 1914-15 when the Eastern Bengal districts were also supplied by the Shillong Vaccine Depôt has proved sufficient for the needs of Assam during that period, as the supply of the vaccine lymph to the Bengal districts was terminated in 1914-15. Out of the total expenditure of Rs. 52,636-11-9 in 1916-17, Rs. 29,676-9-11 was paid from the provincial funds, Rs. 20,076-5-0 from the local funds, Rs. 2,061-4-6 from municipal funds and Rs. 822-8-4 by Native States.

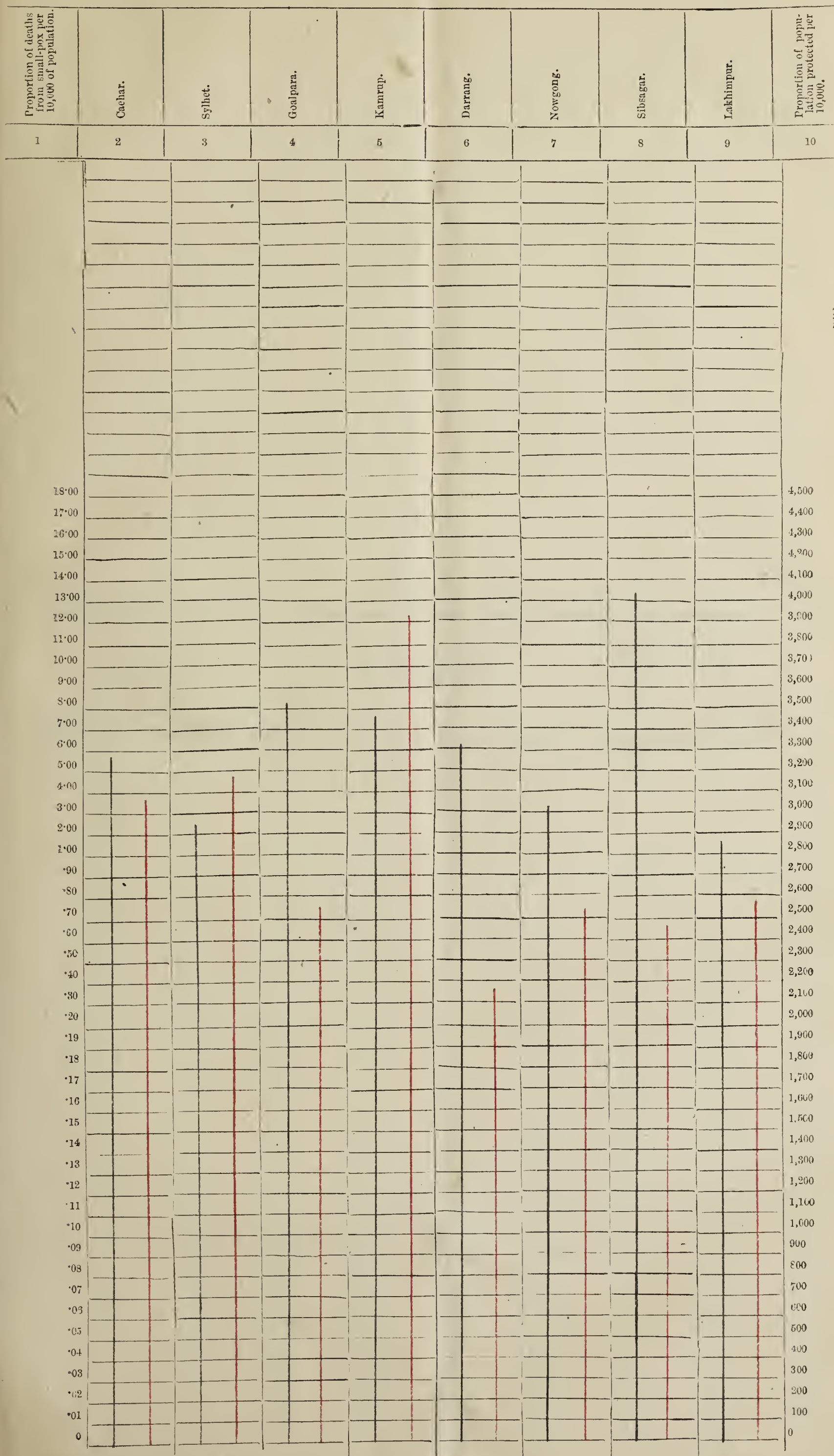
The average cost of each successful case of vaccination was annas two and pies nine in 1916-17 as compared with annas three and pie one in 1915-16 and annas three and pies seven in 1914-15.

14. During the year 1916-17, 24,338 primary vaccinations and 11,280 re-vaccinations were reported to have been performed in tea estates, against 14,821 and 2,188, respectively in 1915-16 and 16,800 and 2,144, respectively in 1914-15. The Civil Surgeon, Lakhimpur, last year brought to notice that the reporting of vaccination in tea estates is very irregular. He suggested that lymph was probably being wasted, and that a nominal price should be charged to prevent wastage. Before taking this measure, however, it was thought advisable that the supply to tea estates should be calculated on the average number of operations reported in the preceding three years, and in 1916 instructions to Civil Surgeons were issued accordingly. From the figures returned for tea-garden vaccination in 1916-17, it would appear as if a considerable improvement in the returns and possibly also in the number of operations performed had resulted. Fifteen cases of vaccinations were reported to have been performed by the medical officers of the Eastern Bengal Railway, 516 cases of primary and 1,281 re-vaccinations were performed in jails and in the lunatic asylum at Tezpur by their medical officers, and their percentages of success were 86.89 and 65.11, respectively.

T. C. McCOMBIE YOUNG, *Major, I. M. S.,*

Sanitary Commissioner, Assam.

The following diagram illustrates the death-rates from small-pox in each district side by side with the proportion of the population protected against the disease by vaccination during the seven years 1910-1911 to 1916-1917.



Note.—Black lines indicate death-rates from small-pox.
Red lines indicate the proportion of population protected by vaccination.

STATEMENTS.

A.—VACCINE

Statement No. I—Showing particulars of Vaccination in

No.	District.	Population of district according to the census of 1911.	Average population per square mile.	Average number of vaccinators employed throughout the season.	Total number of persons vaccinated.			Average number of persons vaccinated by each vaccinator.	Primary vaccination.	
					Male.	Female.	Total.		Total.	Under one year.
1	2	3	4	5	6			7	8	9
SURMA VALLEY AND HILL DISTRICTS.										
1	Cachar ... By paid vaccinators ...	497,463	139	20	15,752	12,529	28,281	1,414	21,683	1,303
2	Sylhet ... By paid vaccinators ...	2,472,671	458	97	71,389	62,077	133,466	1,375	109,304	7,091
3	Khasi and Jaintia Hills ... By paid vaccinators.	235,069	40	9	5,245	5,848	11,093	1,232	7,834	1,351
4	Naga Hills ... By paid vaccinators ...	149,623	48	5	2,494	2,241	4,735	947	4,502	654
5	Lushai Hills ... By paid vaccinators ...	91,204	12	5	2,429	1,827	4,256	851	3,991	31
	Total of Surma Valley and Hill Districts. By paid vaccinators ...	3,446,030	136	136	97,309	84,522	181,831	1,337	147,314	10,430
ASSAM VALLEY DISTRICTS.										
6	Goalpara ... { By paid vaccinators ... By licensed vaccinators ... }	600,643	151 {	2 27	243 11,230	180 9,808	423 21,038	211 779	283 19,610	215 6,221
7	Kamrup ... By paid vaccinators ...	667,828	173	40	21,611	17,207	38,818	970	34,553	6,508
8	Darrang ... By paid vaccinators ...	377,314	110	17	6,706	6,095	12,801	753	10,708	1,192
9	Nowgong... By paid vaccinators ...	303,596	79	16	6,744	6,238	12,982	811	12,809	2,368
10	Sibsagar ... By paid vaccinators ...	690,299	138	34	16,419	14,706	31,125	915	26,248	4,024
11	Lakhimpur By paid vaccinators ...	468,989	103	17	5,345	4,754	10,099	594	9,122	823
12	Garohills... By paid vaccinators ...	158,936	50	6	3,743	3,563	7,306	1,217	6,399	2,748
	Total of Assam Valley Districts. { By paid vaccinators ... By licensed vaccinators ... }	3,267,605	118 {	132 27	60,811 11,230	52,743 9,808	113,554 21,038	860 779	100,122 19,610	17,878 6,221
13	Manipur ... By paid vaccinators ...	346,222	41	9	6,823	6,136	12,959	1,439	12,946	10,710
14	North-East Frontier District. By paid vaccinators ...	*	*	2	784	354	1,138	569	635	59
	Total Vaccine Department. { By paid vaccinators ... By licensed vaccinators ... Total ... }	7,059,857	115 {	279 27 306	165,727 11,230 176,957	143,755 9,808 153,563	309,482 21,038 330,520	1,109 779 1,080	261,017 19,610 280,627	39,077 6,221 45,298
	Total Dispensaries ...	...	...	...	...	...	3,712	...	2,553	258
	Total Railways ...	...	...	...	10	5	15	...	8	3
	Total tea-gardens by garden agencies ...	...	...	...	18,633	16,985	35,618	...	24,338	8,166
	Total Jails and Lunatic Asylum ...	...	...	...	1,736	61	1,797	...	516	...
	Grand total ...	7,059,857	115	303	197,336	170,614	371,662	1,080	308,042	53,725

* Not available.

Sum

	Total number of persons vaccinated.		Total number of operations performed.	
	Primary.	Re-vaccinations.	Primary.	Re-vaccinations.
1	2	3	4	5
By special staff (Statement I)	280,627	49,893	280,627	49,893
By dispensary staff (Statement III)	2,553	1,159	2,553	1,159
By other agencies—tei-gardons, Railway and Jail agencies	24,862	12,568	24,862	12,568
Total	308,042	63,620	308,042	63,620

DEPARTMENT.

the Province of Assam during the year 1916-17.

vaccination.			Re-vaccination.			Percentage of successful cases in which the results were known.		Persons successfully vaccinated per 1,000 of population.	Percentage of unknown cases to total cases.		Average annual number of persons successfully vaccinated during previous five years.		Average annual number of deaths from small-pox during previous five years.	
Successful.		Unknown.	Total.	Successful.	Unknown.	Primary.	Re-vaccination.		Primary.	Re-vaccination.	Number.	Ratio per 1,000.	Number.	Ratio per 1,000.
Over one and under six years.	Total of all ages.													
10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
13,445 77,661	20,733 107,470	309 87	6,598 24,162	4,615 13,103	767 12	97.00 98.40	79.14 54.27	50.95 48.76	1.42 .07	11.62 .04	16,392 111,506	32.95 45.10	3 906	.01 .36
3,862	7,806	...	3,259	1,579	...	99.64	48.45	39.92	...	...	8,023	34.13	14	.06
2,815 2,672	4,210 3,074	75 221	233 265	190 81	3 40	95.10 81.53	82.60 36.00	29.40 34.59	1.66 5.53	1.28 15.09	4,614 2,920	30.84 32.02	......	......
100,455	143,293	692	34,517	19,573	822	97.72	58.08	47.14	.46	2.38	143,455	41.63	923	.26
59 11,550 27,235 7,411 8,856 7,060 6,218 3,194	279 18,744 33,743 10,023 12,671 25,966 8,847 5,942	... 81 71 293 8 55 17 161	140 1,428 4,265 2,093 173 4,877 977 907	90 1,150 3,138 1,107 97 3,710 911 783	1 87 138 234 ... 103 2 37	98.58 95.98 97.85 96.23 98.98 99.13 97.16 95.25	64.74 85.75 76.03 59.54 56.06 77.71 93.43 90.	} 33.73 55.22 29.49 42.05 42.99 20.80 42.31	{41 .20 2.73 .06 .20 .18 2.51	.71 6.09 3.23 11.18 ... 2.11 .20 4.07	} 22,740 39,341 11,747 10,365 19,276 13,335 13,313	37.86 58.91 31.13 34.14 27.92 28.43 83.76	422 1,228 221 140 298 25 28	.70 1.84 .59 .46 .43 .05 .18
60,053 11,550	97,171 18,744	605 81	13,432 1,428	9,836 1,150	515 87	97.94 95.98	76.14 85.75	} 38.92	{ .60 .41	3.83 6.09	} 130,117	39.82	2,362	.72
1,313	12,023	864	13	13	...	99.51	100.00	34.76	6.67	...	12,277	35.46	...	...
506	604	31	503	161	41	100.	34.84	...	4.88	8.15	...	...	...	...
162,327 11,550 173,877	253,391 18,744 272,135	2,192 81 2,273	48,465 1,428 49,893	29,583 1,150 30,733	1,378 87 1,465	97.90 95.98 97.76	62.82 85.75 63.46	} 42.90	{ .83 .41 .80	2.84 6.09 2.93	} 285,849	40.49	3,285	.47
1,179	2,149	272	1,159	605	197	94.21	62.83	..	10.65	16.99	1,419	...	...	...
5	8	...	7	7	...	100.	100.	...	...	...	104	...	...	...
10,801	23,762	67	11,280	10,732	126	97.90	96.21	...	.27	1.11	14,053	...	...	...
163	431	20	1,281	756	120	86.89	65.11	...	3.87	9.36	765	...	...	...
186,030	298,485	2,632	63,620	42,833	1,908	97.73	69.40	48.34	.85	2.99	302,190	42.80	3,285	.47

mary.

Percentage of successful cases in which results were known.		Average number of persons vaccinated by each vaccinator.		Number of children successfully vaccinated.		Ratio of successful vaccination per 1,000 of population.	Total cost of Department.	Average cost of each successful case.
Primary.	Re-vaccinations.	Vaccinators employed.	Persons vaccinated by each vaccinator.	Under one year.	One and under six years.			
6	7	8	9	10	11	12	13	14
97.76	63.46	306	1,080	45,298	173,877	42.90	Rs. a. p. 52,636 11 9	Rs. a. p. 0 2 9
94.21	62.88	...	...	258	1,179	...	...	...
97.68	93.28	...	...	8,169	10,974	...	...	...
97.73	69.40	306	1,080	53,725	186,030	48.34	52,636 11 9	0 2 9

Statement No. II—Showing the cost of Vaccination in

No.	District.	Expenses												
		European supervising officer.	Pay.	Native supervising officer.	Pay.	Paid vaccinators.	Pay.	Licensed vaccinators.	Pay.	Clerks.	Pay.	Peons, etc.	Pay.	Total pay of establishment.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
			Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.		Rs. a. p.	Rs. a. p.
1	Cachar ...	...	...	2	836 0 0	20	1,560 10 3	...	...	...	...	...	...	2,336 10 3
2	Sylhet ...	...	...	6	2,270 0 7	97	7,580 0 1	...	...	...	...	...	...	9,850 0 8
3	Khasi and Jaintia Hills	...	...	2	851 0 0	9	1,712 0 0	...	...	...	...	...	...	2,563 0 0
4	Naga Hills	...	...	1	300 0 0	5	812 14 3	...	...	...	...	...	...	1,112 14 3
5	Lushai Hills	...	...	1	251 9 8	5	488 14 3	...	...	...	...	...	...	740 7 11
6	Goalpara ...	...	...	2	753 0 0	2	384 8 0	27	...	...	...	...	...	1,137 8 0
7	Kamrup ...	...	...	3	1,034 7 4	40	2,923 0 4	...	...	...	...	...	...	3,957 7 8
8	Darrang ...	...	...	3	853 4 2	17	1,812 0 0	...	...	...	...	...	...	2,665 4 2
9	Nowgong ...	...	...	2	700 0 0	16	1,296 12 9	...	...	...	...	...	...	2,096 12 9
10	Sibsagar ...	...	...	3	990 5 5	34	2,458 1 10	...	...	...	...	...	...	3,448 7 3
11	Lakhimpur	...	...	2	900 0 0	17	1,747 0 3	...	...	...	...	...	...	2,647 0 3
12	Garo Hills	...	...	1	336 0 0	6	634 0 8	...	...	...	...	...	...	970 0 8
13	Manipur State	...	...	1	240 0 0	9	563 13 4	...	...	...	...	...	...	803 13 4
14	North-East Frontier District.	...	...	...	...	2	193 8 8	...	...	...	...	...	...	193 8 8
	Total of Districts ...	...	...	29	10,315 11 2	279	24,267 4 8	27	...	...	...	...	...	34,582 15 10
	Shillong Vaccine Depot	1	600 0 0	1	1,203 6 1	12	1,941 7 2	...	...	...	...	...	...	3,744 13 3
	Total for the Province	1	600 0 0	30	11,519 1 3	291	26,208 11 10	27	...	...	...	...	...	38,327 13 1

the Province of Assam during the year 1916-17.

diture.				Paid from—						Number of all successful vaccina- tions and re-vaccinations.	Average cost of each successful case.
Travelling allowance.	Contingencies.		Total cost.	Imperial Fund.	Provincial Fund.	Local Fund.	Municipalities.	Native States.	Total.		
	Cost of lymph.	Other contingencies.									
16	17	18	19	20	21	22	23	24	25	26	27
Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.	Rs. a. p.		Rs. a. p.
1,369 0 4	...	111 8 9	3,877 3 4	...	1,734 3 7	2,072 15 9	70 0 0	...	3,877 3 4	25,348	0 2 6
2,814 13 0	...	267 2 3	12,931 15 11	...	3,955 13 7	8,675 14 3	300 4 1	...	12,931 15 11	120,578	0 1 8
769 8 0	...	17 12 0	3,350 4 0	...	3,158 4 0	...	192 0 0	...	3,350 4 0	9,385	0 5 8
282 6 0	...	8 5 0	1,403 9 3	...	1,403 9 3	...	...	...	1,403 9 3	4,400	0 5 1
401 8 0	...	55 9 7	1,197 9 6	...	1,197 9 6	...	...	...	1,197 9 6	3,155	0 6 0
443 6 3	1,580 14 3	...	1,169 4 3	346 2 0	65 8 0	...	1,580 14 3	20,263	0 1 2
488 1 9	...	42 14 6	4,488 7 11	...	1,522 11 1	2,483 13 8	481 15 2	...	4,488 7 11	36,881	0 1 11
431 12 6	...	80 0 0	3,177 0 8	...	1,365 0 8	1,632 0 0	180 0 0	...	3,177 0 8	11,130	0 4 6
366 9 9	...	29 15 6	2,523 6 0	...	1,091 7 6	1,365 5 3	66 9 3	...	2,523 6 0	12,768	0 3 1
535 9 6	...	35 10 0	4,019 10 9	...	1,561 8 11	1,993 1 10	465 0 0	...	4,019 10 9	29,676	0 2 2
677 3 6	3,324 3 9	...	1,577 3 6	1,507 0 3	240 0 0	...	3,324 3 9	9,758	0 5 5
706 8 0	...	7 11 3	1,684 3 11	...	1,684 3 11	...	...	...	1,684 3 11	6,725	0 4 0
...	...	18 11 0	822 8 4	...	...	...	...	822 8 4	822 8 4	12,036	0 1 1
...	193 8 8	...	193 8 8	...	...	...	193 8 8	765	0 4 0
9,316 6 7	...	675 3 10	44,574 10 3	...	21,614 8 5	20,076 5 0	2,061 4 6	822 8 4	44,574 10 3	302,868	0 2 4
...	...	4,317 4 3	8,062 1 6	...	8,062 1 6	...	...	...	8,062 1 6	...	...
9,316 6 7	...	4,992 8 1	52,636 11 9	...	29,676 9 11	20,076 5 0	2,061 4 6	822 8 4	52,636 11 9	302,868	0 2 9

B.—DISPENSARY

Statement No. III—Showing Dispensary Vaccination

District.	Number of dispensaries in each district to which a vaccinator is attached.	Average number of vaccinators attached to dispensaries during the season.	Total number of persons vaccinated.	Average number of persons vaccinated by each vaccinator.	Primary vaccination.				
					Total.	Successful.			Un-known.
						Under one year.	Over one and under six years.	Total of all ages.	
1	2	3	4	5	6	7	8	9	10
Cachar	1,761	...	1,024	44	512	953	25
Sylhet
Khasi and Jaintia Hills
Naga Hills	444	...	390	53	174	364	2
Lushai „	975	...	620	11	186	334	238
Goalpara
Kamrup
Darrang
Nowgong	355	...	353	27	270	338	1
Sibsagar
Lakhimpur
Garó Hills	61	...	50	8	36	44	6
Manipur State	116	...	116	115	1	116	...
North-East Frontier District.
Total	3,712	...	2,553	258	1,179	2,149	272

Comparative Statement No. IV—Showing the number of persons primarily vaccinated in each of the under

Establishment.	Persons							
	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.
	Year ending							
	1907-08.		1908-09.		1909-10.		1910-11.	
1	2	3	4	5	6	7	8	9
Government ...	39,422	38,531	39,838	39,078	31,212	30,128	25,926	23,580
Dispensaries ...	15,634	15,294	3,160	2,990	2,818	2,474	2,549	2,128
Municipal ...	3,299	3,262	3,513	3,098	2,809	2,182	2,347	2,237
Local Funds ...	146,694	142,534	150,917	149,433	147,644	142,315	161,234	154,616
Licensed vaccinators	25,072	24,874	31,084	30,920	39,615	38,285	31,811	29,902
Apprentices ...	3,812	3,801	5,010	4,920	5,187	5,102	4,632	4,563
Native States ...	14,247	12,150	13,302	11,100	13,316	10,166	13,353	11,612
Total ...	248,220	240,416	246,824	241,548	242,131	230,652	241,907	228,638

VACCINATION.

in the Province of Assam during the year 1916-17.

Re-vaccination.			Percentage of successful cases in which the results were known.		Percentage of unknown cases to total cases.	
Total.	Successful.	Unknown.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
11	12	13	14	15	16	17
737	433	91	95.39	67.02	2.44	12.34
...
...
54	47	2	93.81	90.38	.51	3.70
355	121	97	87.43	46.89	38.38	27.32
...
...
...
2	...	...	96.02	...	.28	...
...
...
11	4	7	100.	100.	12.00	63.63
...	...	...	100.	...	...	...
...
1,159	605	197	94.21	62.88	10.65	16.99

and the number of those persons who were successfully vaccinated in the Province of Assam mentioned official years.

primarily vaccinated.

Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.	Total number.	Number success-fully vaccinated.
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31st March.

1911-12.		1912-13.		1913-14.		1914-15.		1915-16.		1916-17.	
10	11	12	13	14	15	16	17	18	19	20	21
24,950	24,146	30,130	28,802	33,014	31,655	23,384	20,649	21,309	18,365	23,969	22,218
1,464	1,390	1,036	937	1,005	900	1,580	1,430	1,095	945	2,553	2,149
3,262	3,023	3,517	3,093	2,897	2,865	2,828	2,684	5,575	5,389	5,110	4,793
179,887	176,566	179,380	176,043	179,040	176,981	169,629	163,948	173,757	168,724	213,215	208,712
37,963	37,231	45,790	44,336	44,537	43,523	34,560	32,706	25,697	24,562	18,942	18,154
16,762	16,411	13,669	13,542	15,329	15,007	17,208	16,645	16,342	15,966	6,445	6,235
13,193	11,756	13,656	11,521	13,626	12,343	13,756	12,595	13,974	12,966	12,946	12,023
277,481	270,523	287,178	278,274	289,448	283,274	262,945	250,657	257,749	246,917	283,180	274,284

Statement No. V—Showing particulars of Vaccination verified by Inspecting Officers for the year 1916-17.

District.	Total number of persons vaccinated.		Total number inspected.				Percentage of inspection to total number vaccinated.				Percentage of successful cases to total number inspected.				Percentage of successes reported by vaccinators.	
			By Deputy Sanitary Commissioners or Civil Surgeons.		By Native Superintendents or other inspecting officers.		By Deputy Sanitary Commissioner or Civil Surgeons.		By Native Superintendents or other inspecting officers.		By Deputy Sanitary Commissioner or Civil Surgeons.		By Native Superintendents or other inspecting officers.			
	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.	Primary.	Re-vaccination.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Cachar ...	22,707	7,335	982	214	15,084	2,796	4.32	29.17	66.42	38.11	94.80	63.50	94.58	68.04	97.00	79.14
Sylhet ...	109,304	24,162	10,768	2,450	53,634	7,897	9.84	10.13	49.06	32.68	95.62	49.67	97.55	49.13	98.40	54.27
Khasi and Jaintia Hills ...	7,834	3,259	401	110	4,000	1,235	5.11	33.75	51.05	37.89	92.81	27.71	175.70	53.84	99.64	48.45
Naga Hills ...	4,892	287	211	...	2,298	130	4.31	...	46.97	45.29	91.94	...	92.56	72.30	95.10	82.60
Lushai „ ...	4,611	620	429	210	1,154	142	9.30	33.87	25.02	22.90	81.11	30.00	72.61	49.29	81.53	36.00
Goalpara ...	19,893	1,568	2,015	75	10,915	857	10.12	4.78	54.86	54.65	96.02	86.66	94.83	75.03	96.01	83.78
Kamrup ...	34,553	4,265	2,109	244	18,805	1,037	6.10	5.72	54.42	24.31	99.23	75.00	96.90	47.00	97.85	76.03
Darrang ...	10,708	2,093	723	328	3,328	672	6.75	15.67	31.07	32.13	94.19	46.64	93.43	54.61	96.23	59.54
Nowgong ...	13,162	175	1,973	27	10,722	105	14.99	15.42	81.46	60.00	98.99	85.18	98.27	34.11	98.98	56.06
Sibsagar ...	26,248	4,877	1,189	273	15,613	1,486	4.52	5.59	59.48	30.46	97.89	86.81	93.08	73.68	99.13	77.71
Lakhimpur ...	9,122	977	455	...	8,686	108	4.98	...	95.00	11.05	...	...	98.29	59.26	97.16	93.43
Garo Hills ...	6,449	918	758	...	2,292	307	11.75	...	35.54	33.44	98.28	...	93.14	74.91	95.25	80.00
Manipur State ...	13,062	13	1,401	...	7,476	...	10.72	...	57.23	...	15.47	...	84.02	...	99.51	100.04
North-East Frontier district	635	503	18	270	...	...	2.83	53.67	...	...	94.40	51.85	...	...	100.00	34.84
Total ...	283,180	51,052	23,422	4,201	150,387	16,772	8.27	8.22	53.10	32.81	88.52	60.30	91.15	59.26	97.76	63.46

Statement No. VI—Showing the number of Vaccinations performed in Municipal towns on children under one year of age during the year 1916-17.

District.	Town.	Number of births during the year 1916.	Number of deaths amongst children under one year during the year 1916.	Number of successful vaccination on children under one year during the year ending 31st March 1917.	Date of extension of Vaccination Act to town.
1	2	3	4	5	6
Cachar	Silchar	202	22	111	21st January 1892.
	Sylhet	336	63	51	1st October 1882.
	Habiganj	138	30	25	11th December 1913.
Sylhet	Sunamganj	134	16	8	28th June 1915.
	Karimganj	53	10	17	27th July 1915.
	Maulvi Bazar	76	20	14	16th April 1916.
Khasi & Jaintia Hills	Shillong	358	74	196	21st June 1895.
	Total of Surma Valley and Hill Districts.	1,297	235	422	
Goalpara	Dhubri	173	18	72	13th February 1891.
	Goalpara	171	25	143	12th November 1890.
Kamrup	Gauhati	328	25	134	August 1882.
	Barpeta	579	83	303	29th October 1915.
Darrang	Tezpur	152	18	122	22nd May 1907.
	Mangaldai	19	7	1	12th October 1916.
Nowgong	Nowgong	236	20	197	7th April 1897.
	Sibsagar	145	25	71	21st January 1892.
Sibsagar	Jorhat	159	32	83	12th April 1892.
	Golaghat	74	12	58	24th March 1892.
	Nazira	129	19	51	1st December 1916.
Lakhimpur	Dibrugarh	260	23	148	September 1883.
	Total of Assam Valley Districts.	2,425	307	1,383	
	Total for the Province.	3,722	542	1,805	

Statement No. VII—Showing, side by side, the ratio per 1,000 of population of deaths

District.	1907-08.		1908-09.		1909-10.		1910-11.	
	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.
1	2	3	4	5	6	7	8	9
Cachar	·004	15,563	·01	13,533	·02	15,177	·03	15,635
Sylhet	·09	82,038	·08	83,817	·07	79,768	·07	83,189
Khasi and Jaintia Hills	·08	13,179	·43	21,272	·59	8,815	·04	5,026
Naga Hills	·02	8,557	...	4,777	...	5,335	...	4,518
Lushai „	·01	3,517	...	3,585	...	2,738	...	2,799
Goalpara	·67	16,922	·34	21,875	·83	26,561	·28	19,065
Kamrup	3·45	31,695	2·40	31,024	1·07	27,111	·58	25,006
Darrang	4·19	9,226	2·77	9,023	1·22	6,778	·30	10,036
Nowgong	·35	7,139	2·44	5,483	3·49	4,523	3·05	7,456
Sibsagar	·63	20,295	·85	21,814	·57	19,084	·19	21,089
Lakhimpur	·74	15,409	·15	14,613	·08	14,688	·05	14,470
Garó Hills ... ..	...	16,826	...	14,851	·09	17,120	·15	13,219
Manipur State ... ..	...	12,152	...	11,370	...	10,429	...	12,032
North-East Frontier district ... ..	...	...	...	...	...	...	...	...
Total	·78	252,518	·64	257,042	·47	238,127	·28	233,590

from small-pox and the number of successful vaccinations during the ten years ending 1916-17.

1911-12.		1912-13.		1913-14.		1914-15.		1915-16.		1916-17.	
Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.	Ratio of deaths from small-pox.	Number of successful vaccination.
10	11	12	13	14	15	16	17	18	19	20	21
·002	16,641	·008	16,992	·006	19,596	...	15,146	·008	13,641	·59	26,734
·38	108,987	·99	132,022	·47	113,226	·14	100,597	·06	102,842	·26	120,578
·004	7,369	·13	10,740	·35	9,128	·64	8,108	·02	4,963	...	9,385
...	4,836	...	5,119	...	6,363	...	4,572	...	3,843	...	4,811
...	3,121	...	3,123	...	3,027	...	3,481	·02	3,639	...	3,610
·44	23,151	·69	19,731	·59	23,408	·78	24,185	1·07	23,236	·82	20,263
1·21	39,178	1·89	39,978	1·02	42,323	2·03	40,178	3·10	35,050	·79	36,881
·56	10,606	·50	10,964	·82	11,508	·36	12,092	·61	13,563	·61	11,130
·44	8,469	·95	6,602	·43	12,946	·24	12,494	·25	12,408	·34	13,106
·16	18,490	·09	18,298	·14	18,768	·18	18,077	1·22	22,813	1·35	29,676
...	14,119	·006	14,063	·07	14,227	·09	13,982	·06	10,282	·18	9,758
·01	15,161	·09	12,338	·81	22,813	·60	9,368	·39	8,171	·13	6,773
...	12,025	...	11,678	...	12,498	...	12,879	...	13,094	...	12,152
...	765
·35	282,153	·67	301,648	·40	309,831	·37	275,159	·58	267,545	·47	305,622

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Resolution on the Vaccination Report of Assam for the three years ending 1916-17.

Extract from the Proceedings of the Chief Commissioner of Assam in the Municipal Department, No. 5677 M., dated the 28th July 1917.

READ—

Vaccination Report of the province of Assam for the three years ending 1916-17.

R E S O L U T I O N .

THE number of vaccinations performed during the three years under review was substantially in advance of the figure for the preceding three years. The death-rate from small-pox was, as in the previous triennium, 47 per thousand. The disease appeared in an epidemic form in Kamrup, where the prejudice of the Mahapurushia sect was an obstacle to vaccination in 1914-15 and 1915-16, but an energetic campaign against the ignorance of the sect was successful in largely reducing the district death-rate from small-pox in 1916-17.

2. The employment of licensed vaccinators remunerated by fees alongside paid vaccinators in the districts of Kamrup, Sibsagar, Lakhimpur and Sylhet has proved unsatisfactory, and was accordingly abolished during the triennium under review. Licensed vaccinators are now employed only in the Goalpara district, and rules for their control are under consideration. It appears that the number of vaccinators entertained in certain districts is inadequate. The Chief Commissioner endorses the Sanitary Commissioner's view that this point requires examination in detail, and will be glad to receive a report on it in due course.

3. The Chief Commissioner notices some improvement in regard to the amount of inspection work done by Civil Surgeons, and trusts that it will be maintained. An improvement is also apparent in the vaccination work in compulsory areas, except Sylhet, where the degree of protection afforded to infants under one year of age is only 18 per cent. As the Sanitary Commissioner remarks, better results should be attainable.

4. The utilisation of the cold storage room at the Shillong Pasteur Institute has enabled arrangements to be made whereby an ample supply of lymph is always on hand to meet a sudden demand and the possibility of the issue of an infective batch of lymph is minimised. Improved arrangements have also been made for the issue of lymph at the commencement of the vaccination season, with the object of obviating deterioration between issue and use.

5. Sir Archdale Earle notices with pleasure the names of officers whose good work has been specially commended by the Sanitary Commissioner, and his thanks are due to Major Young for his careful administration of this important branch of his work.

ORDERED that the Resolution and the Report be published in the *Assam Gazette*.

By order of the Chief Commissioner of Assam,

A. W. BOTHAM,

Second Secretary to the Chief Commissioner of Assam.

